

## Appendix E Traffic and Transportation

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**Tables in Appendix E follow the discussion in Section 1.2.3, Project Need and Section 2.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities in a sequential order.**

**Measures of congestion for the project area:** Tables E-1 and E-2 present results of the May 2003 traffic study prepared for this project, which identified measures of congestion for the project area, including vehicles per distance per lane, vehicle speed, and level of service (LOS).

**Intersection Levels of Service:** The results of the intersection LOS study for the existing conditions (2001) are shown in Table E-3. Appendix E describes the definitions for the two methodologies (CCTA LOS and 2000 HCM procedures) for intersection level of service analysis in Tables E-15, E-16 and E-17. Tables E-18 and E-19 show the Year 2030 intersection analysis results for intersections at interchanges and isolated intersections, respectively.

**Year 2030 Traffic Volumes:** Table E-4 presents 2030 traffic volumes for SR 4 segments in the study area.

**Safety:** Table E-5 shows the SR 4 Accident History for three years from October 1, 1999 through September 30, 2002

**Mainline Peak Hour Service Levels (LOS):** Tables E-1 and E-2 show the level of service of freeway segments in the study area, under existing conditions. Table E-6 and E-7 show existing and 2030 (both No-Build and Build) vehicle speed and levels of service for westbound and eastbound SR 4 in metric units. Tables E-8 and E-9 present the same data in English units.

**Ramp Junction Analysis:** Tables E-10 and E-11 tabulates the results of the ramp junction analysis in metric units, and Tables E-12 and E-13 in English units.

**Weaving Section Analysis:** Table E-14 presents the results of weaving section analysis.

<b>Table E-1: SR 4 Existing (2001) Freeway Mainline Service Levels Distance in Kilometers (km)</b>						
<b>SR 4 Segment</b>	<b>A.M.-Peak Hour</b>			<b>P.M.-Peak Hour</b>		
	<b>Vehicles per km per lane</b>	<b>Vehicle speed (kph)</b>	<b>LOS<sup>1</sup></b>	<b>Vehicles per km per lane</b>	<b>Vehicle speed (kph)</b>	<b>LOS<sup>1</sup></b>
<b>Eastbound</b>						
Loveridge Off to SB Loveridge On	12-19	100	D	19-25	32	F
SB Loveridge On to NB Loveridge On						
NB Loveridge On to SB Somersville Off	12-19	105	C	37-43	68	F
SB Somersville Off to NB Somersville Off	6-19	105	C	43-50	32	F
NB Somersville Off to Somersville On						
Somersville On to L Street Off	12-19	105	C	26-31	76	F
L Street Off to G Street Off	12-19	105	C	19-25	90	E
G Street Off to A Street Off	6-12	105	B	19-25	97	D
A Street Off to A Street On	6-12	105	B	12-19	105	C
A Street On to Hillcrest Off	6-12	105	B	12-19	105	C
Hillcrest Off to Hillcrest On	<6	105	A	6-12	105	B
<b>Westbound</b>						
Hillcrest Off to Hillcrest On	6-12	105	B	<6	105	A
Hillcrest On to A Street Off	6-12	103	C	6-12	105	B
A Street Off to A Street On	<6	16	F <sup>2</sup>	6-12	93	E
A Street On to G Street On	12-19	16	F <sup>2</sup>	12-19	105	C
G Street On to L Street On	12-19	14	F <sup>2</sup>	12-19	105	C
L Street On to Somersville Off	19-25	19	F <sup>2</sup>	12-19	105	C
Somersville Off to Somersville On	19-25	11	F <sup>2</sup>	6-12	89	E
Somersville On to Loveridge Off	31-37	21	F <sup>2</sup>	12-19	105	C
Loveridge Off to Loveridge On	37-43	19	F	6-12	82	F
Note: 1. Level of service (LOS) is a measurement of congestion, ranging from LOS A to LOS F, with LOS A representing free-flowing conditions, and LOS F stop-and-go conditions. 2. Although the model reported densities (vehicles per lane per kilometer) that would range from LOS A and D ( $\leq 22$ vehicles per lane per kilometer), field observations at these locations show LOS F ( $> 28$ vehicles per lane per kilometer). These six locations are reported in this table as LOS F but with the model reported densities. Source: Fehr & Peers, May 2003						

**Table E-2: SR 4 Existing (2001) Freeway Mainline Service Levels  
Distance in Miles**

SR 4 Segment	A.M.-Peak Hour			P.M.-Peak Hour		
	Vehicles per mile per lane	Vehicle speed (mph)	LOS <sup>1</sup>	Vehicles per mile per lane	Vehicle speed (mph)	LOS <sup>1</sup>
<b>Eastbound</b>						
Loveridge Off to SB Loveridge On	20-30	62	D	30-40	20	F
SB Loveridge On to NB Loveridge On						
NB Loveridge On to SB Somersville Off	20-30	65	C	60-70	42	F
SB Somersville Off to NB Somersville Off	10-30	65	C	70-80	20	F
NB Somersville Off to Somersville On						
Somersville On to L Street Off	20-30	65	C	40-50	47	F
L Street Off to G Street Off	20-30	65	C	30-40	56	E
G Street Off to A Street Off	10-20	65	B	30-40	60	D
A Street Off to A Street On	10-20	65	B	20-30	65	C
A Street On to Hillcrest Off	10-20	65	B	20-30	65	C
Hillcrest Off to Hillcrest On	<10	65	A	10-20	65	B
<b>Westbound</b>						
Hillcrest Off to Hillcrest On	10-20	65	B	<10	65	A
Hillcrest On to A Street Off	10-20	64	C	10-20	65	B
A Street Off to A Street On	<10	10	F <sup>2</sup>	10-20	58	E
A Street On to G Street On	20-30	10	F <sup>2</sup>	20-30	65	C
G Street On to L Street On	20-30	9	F <sup>2</sup>	20-30	65	C
L Street On to Somersville Off	30-40	12	F <sup>2</sup>	20-30	65	C
Somersville Off to Somersville On	30-40	7	F <sup>2</sup>	10-20	55	E
Somersville On to Loveridge Off	50-60	13	F <sup>2</sup>	20-30	65	C
Loveridge Off to Loveridge On	60-70	12	F	10-20	51	F
Note: 1. Level of service (LOS) is a measurement of congestion, ranging from LOS A to LOS F, with LOS A representing free-flowing conditions, and LOS F stop-and-go conditions. 2. Although the model reported densities (vehicles per lane per mile) that would range from LOS A and D ( $\leq 35$ vehicles per lane per mile), field observations at these locations show LOS F ( $> 45$ vehicles per lane per mile). These six locations are reported in this table as LOS F but with the model reported densities. Source: Fehr & Peers, May 2003						

**Table E-3: Existing (2001) Intersection Levels of Service**

Intersection	A.M.-Peak Hour		P.M.-Peak Hour	
	VC / LOS <sup>1</sup>	Delay / LOS <sup>2</sup>	VC / LOS <sup>1</sup>	Delay / LOS <sup>2</sup>
Loveridge Road / Buchanan Road	0.64/B	18.1/B	0.69/B	13.5/B
Loveridge Road / East Leland Road	0.67/B	34.6/C	0.75/D	50.8/D
Loveridge Road / Eastbound SR 4 On/Off-Ramps	0.57/A	8.5/A	0.43/A	5.5/A
Westbound SR 4 On/Off-Ramps to California Ave.	0.58/A	15.4/B	0.75/C	36.9/D
Loveridge Road / California Avenue (South)	0.56/A	23.3/C	0.55/A	25.1/C
Loveridge Road / California Avenue (North)	18.6/C <sup>3</sup>		21.1/C <sup>3</sup>	
Loveridge Road / Pittsburg-Antioch Highway	0.64/B	46.4/D	1.07/F	>80/F
Somersville Road / Buchanan Road	0.90 / D	>80 / F	0.68 / B	50.7 / D
Somersville Road / Delta Fair Blvd.	0.68 / B	33.7 / C	0.70 / B	51.8 / D
Somersville Road / EB SR 4 On/Off-Ramps	0.51 / A	14.4 / B	0.86 / D	24.3 / C
Somersville Road / WB SR 4 On/Off-Ramps	0.42 / A	13.8 / B	0.61 / B	30.2 / C
Somersville Rd. /Mahogany Wy. / Century Blvd.	0.26 / A	20.1 / C	0.48 / A	29.1 / C
Somersville Rd. / Pittsburg-Antioch Highway	0.44 / A	19.1 / B	0.59 / A	23.4 / C
L Street / Buchanan Road / Fitzuren Road	0.61 / B	41.9 / D	0.63 / B	37.5 / D
Contra Loma Blvd. / Eastbound SR 4 Off-Ramp	18.8 / C <sup>3,4</sup>		39.9 / E <sup>3,4</sup>	
L Street / Westbound SR 4 On-Ramp	4.4 / A <sup>3</sup>		4.7 / A <sup>3</sup>	
L Street / Claudia Court	19.3 / C <sup>3</sup>		16.8 / C <sup>3</sup>	
G Street / EB SR 4 Off-Ramp / Tregallas Rd.	>50 / F <sup>3</sup>		25.3 / D <sup>3</sup>	
G Street / WB SR 4 On-Ramp / Drake Street	>50 / F <sup>3</sup>		31.5 / D <sup>3</sup>	
Lone Tree Way / Tregallas Rd. (South)	0.56 / A	17.6 / B	0.65 / B	27.3 / C
Lone Tree Way / Tregallas Rd. (North)	0.50 / A	6.4 A	0.48 / A	4.4 / A
A Street / Eastbound SR 4 On/Off-Ramps	0.61 / A	12.5 B	0.60 / A	21.0 / C
A Street / Westbound SR 4 On/Off-Ramps	0.78 / C	35.7 / D	0.60 / A	22.0 / C
A Street / Bryan Ave./Texas Street	>50 / F <sup>3</sup>		>50 / F <sup>3</sup>	
A Street / 10 <sup>th</sup> Street	0.57 / A	23.0 / C	0.50 / A	11.7 / B
Hillcrest Rd. / Tregallas Rd./Larkspur Drive	0.54 / A	17.6 / B	0.74 / C	37.3 / C
Hillcrest Rd. / EB SR 4 On/Off-Ramps	0.58 / A	3.3 / A	0.77 / C	47.5 / D
Hillcrest Rd. / WB SR 4 On/Off-Ramps	0.61 / B	29.7 / C	0.53 / A	21.9 / C
Hillcrest Rd. / Sunset Dr.	0.27 / A	16.9 / B	0.35 / A	20.3 / C
Hillcrest Rd. / East 18 <sup>th</sup> Street	0.69 / B	38.1 / D	0.66 / B	30.7 / C

Notes:

1. VC/LOS indicates volume to capacity and LOS based on CCTA LOS analysis. Volume to capacity (VC) is a ratio of vehicle volume to roadway capacity, with numbers greater than 1.0 indicating the roadway capacity is exceeded.
2. Delay/LOS indicates signalized intersection average vehicle delay/LOS based on SYNCHRO 5.0 and 2000 Highway Capacity Manual. Average vehicle delay is measured in seconds per vehicle.
3. These intersections are not signalized. The results reported for these intersections are control delay/LOS, for the worst approach based on SYNCHRO 5.0 and 2000 HCM.
4. The L Street/Eastbound SR 4 off-ramp intersection is analyzed as all-way-stop-controlled; however, the results are reported for the southbound approach with higher stopped volume.

Source: Fehr & Peers Associates, Inc, May 2003.

<b>Table E-4: SR 4 Year 2030 Traffic Volumes</b>		
<b>SR 4 Segment</b>	<b>Traffic Volume</b>	
	<b>A.M. Peak</b>	<b>P.M. Peak</b>
<b>Eastbound</b>		
West limit of project to Loveridge Off	4,580	5,980
Loveridge Off to SB Loveridge On	3,920	3,840
SB Loveridge On to NB Loveridge On	4,130	4,380
NB Loveridge On to SB Somersville Off	4,460	4,950
SB Somersville Off to NB Somersville Off	4,020	4,500
NB Somersville Off to Somersville On	3,790	4,310
Somersville On to L Street Off	4,520	5,440
L Street Off to G Street Off	4,130	5,110
G Street Off to A Street Off	3,920	5,000
A Street Off to A Street On	3,190	4,370
A Street On to Hillcrest Off	3,860	5,030
Hillcrest Off to Hillcrest On	2,780	3,770
Hillcrest On to east limit of project		
<b>Westbound</b>		
East limit of project to Hillcrest Off	4,160	3,770
Hillcrest Off to Hillcrest On	3,580	3,070
Hillcrest On to A Street Off	4,690	4,700
A Street Off to A Street On	4,190	3,830
A Street On to G Street On	4,780	4,660
G Street On to L Street On	4,870	4,740
L Street On to Somersville Off	5,090	5,020
Somersville Off to Somersville On	4,470	4,020
Somersville On to Loveridge Off	5,360	4,670
Loveridge Off to Loveridge On	4,750	3,900
Loveridge On to west limit of project	6,630	4,880
Source: Fehr & Peers Associates, Inc, May 2003		

**Table E-5: SR 4 Accident History -  
October 1, 1999 through September 30, 2002**

Route 4/Location	Number of Accidents			Accident Rates (ACCS/MVKM)					
				Actual SR 4 Rate			Statewide Average		
	Tot.	Fat.	Inj.	Fat.	F+I	Tot.	Fat.	F+I	Tot.
<b><i>SR 4 Mainline</i></b>									
-KP 37.6 to 47.6 -(PM 23.4 to R029.6) Eastbound (EB)	357	2	131	0.004	0.29	0.78	0.009	0.28	0.76
-KP 37.6 to 47.6 -(PM 23.4 to R029.6) Westbound (WB)	425	2	151	0.004	0.34	0.93	0.009	0.28	0.76
<b><i>Loveridge Road</i></b>									
-EB off to Loveridge	9	0	5	0.000	0.40	0.73	0.003	0.38	0.93
-EB on from SB Loveridge	1	0	1	0.000	0.17	0.17	0.002	0.20	0.53
-EB on from NB Loveridge	6	0	2	0.000	0.29	0.88	0.002	0.14	0.37
-WB off to Loveridge	3	0	2	0.000	0.17	0.25	0.003	0.24	0.71
-WB off to California	16	0	3	0.000	0.26	1.40	0.003	0.24	0.71
-WB on from Loveridge	3	0	2	0.000	0.18	0.27	0.001	0.12	0.34
<b><i>Somersville Road</i></b>									
-EB off to SB Somersville	5	0	1	0.000	0.14	0.71	0.002	0.14	0.37
-EB off to NB Somerville	8	0	3	0.000	0.32	0.86	0.002	0.26	0.78
-EB on from Somersville	6	0	3	0.000	0.14	0.27	0.001	0.20	0.50
-WB on from Somersville	9	1	2	0.065	0.19	0.58	0.001	0.20	0.50
-WB off to Somersville	9	0	3	0.000	0.15	0.45	0.002	0.31	0.84
<b><i>Contra Loma Boulevard – L Street</i></b>									
-EB off to L Street	3	0	1	0.000	0.14	0.42	0.003	0.38	0.93
-WB on from L Street	4	0	3	0.000	0.46	0.62	0.001	0.20	0.50
<b><i>G Street</i></b>									
-EB off to H Street	1	0	1	0.000	0.16	0.16	0.003	0.38	0.93
-WB on from H Street	2	0	0	0.000	0.00	0.38	0.001	0.20	0.50
<b><i>Lone Tree Way – A Street</i></b>									
-EB off to A Street	14	0	5	0.000	0.24	0.68	0.003	0.38	0.93
-EB on from A Street	3	0	2	0.000	0.35	0.52	0.001	0.20	0.50
-WB on from A Street	3	0	3	0.000	0.14	0.14	0.001	0.20	0.50
-WB off to A Street	2	0	1	0.000	0.16	0.32	0.003	0.38	0.93
<b><i>Hillcrest Avenue</i></b>									
-EB off to Hillcrest	4	0	2	0.000	0.07	0.15	0.003	0.38	0.93
-EB on from Hillcrest	1	0	0	0.000	0.00	0.32	0.001	0.20	0.50
-WB on from Hillcrest	5	0	1	0.000	0.04	0.18	0.001	0.20	0.50
-WB off to Hillcrest	0	0	0	0.000	0.00	0.00	0.003	0.38	0.93
Notes: Shading denotes locations that exceed the statewide average for similar facilities. Source: Caltrans, TASAS, 2003.									



**Table E-6: Existing 2001 and Year 2030 Westbound Mainline Peak-Hour Service Levels (Metric Units)**

SR 4 Mainline Segment	2001 Existing		2030 No Build		2030 Build	
	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>
Beginning - Hillcrest Avenue Off-Ramp			(43-50) [35] F	(43-50) [35] F	(12-19) [103] D	(12-19) [105] C
Hillcrest Ave. Off-Ramp - Hillcrest Ave. NB On-Ramp	(6-12) [105] B	(<6) [105] A	(80-90) [24] F	(>100) [21] F	(12-19) [105] C	(6-12) [105] B
Hillcrest Ave. NB On-Ramp - Hillcrest Ave. SB On-Ramp					(12-19) [105] C	(6-12) [105] B
Hillcrest Ave. SB On-Ramp - A Street Off-Ramp	(6-12) [103] C	(6-12) [105] B	(43-50) [40] F	(25-31) [77] F	(12-19) [100] D	(12-19) [105] C
A Street Off-Ramp - A Street NB On-Ramp	(<6) <sup>2</sup> [16] F	(6-12) [93] E	(43-50) [34] F	(31-37) [50] F	(19-25) [95] E	(12-19) [103] D
A Street NB On-Ramp - A Street SB On-Ramp					(12-19) [95] D	(12-19) [105] C
A Street SB On-Ramp - L Street Off-Ramp					(19-25) [92] E	(12-19) [105] C
A Street On-Ramp - G Street On-Ramp	(12-19) <sup>2</sup> [16] F	(12-19) [105] C	(37-43) [43] F	(37-43) [50] F		
G Street On-Ramp - L Street On-Ramp	(12-19) <sup>2</sup> [14] F	(12-19) [105] C	(37-43) [45] F	(43-50) [47] F		
L Street Off-Ramp - L Street On-Ramp					(19-25) [90] E	(12-19) [101] D
L Street On-Ramp - Somersville Off-Ramp	(19-25) <sup>2</sup> [19] F	(12-19) [105] C	(43-50) [42] F	(25-31) [84] F	(12-19) [93] D	(12-19) [105] C
Somersville Rd. Off-Ramp - Somersville Rd. On-Ramp	(19-25) <sup>2</sup> [11] F	(6-12) [89] E	(37-43) [40] F	(19-25) [93] E	(19-25) [90] E	(12-19) [105] C
Somersville Rd. On-Ramp - Loveridge Rd. Off-Ramp	(31-37) [21] F	(12-19) [105] C	(31-37) [58] F	(19-25) [90] E	(12-19) [95] D	(6-12) [105] B
Loveridge Rd. Off-Ramp - Loveridge Rd. On-Ramp	(37-43) [19] F	(6-12) [82] F	(19-25) [80] E	(12-19) [93] D	(19-25) [97] D	(12-19) [105] C
Loveridge Rd. On-Ramp - Harbor Rd. Off-Ramp			(19-25) [89] E	(12-19) [105] C	(12-19) [98] D	(6-12) [105] B

Note:

1. (12-19) [100] C = (Density range in vehicles per kilometer per lane) [Vehicle speed in kph] Level of service; **bold text** indicates LOS F. Shaded cells denote the absence of the ramp in question.

2. Although FREQ is reporting densities between LOS A and LOS D, field observations show LOS F.

Source: Fehr & Peers Associates, May 2003

**Table E-7: Existing 2001 and Year 2030 Eastbound Mainline Peak-Hour Service Levels (Metric Units)**

SR 4 Mainline Segment	2001 Existing		2030 No Build		2030 Build	
	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>
Railroad Ave. On-Ramp – Loveridge Rd. Off-Ramp			(43-50) [31] F	(43-50) [32] F	(6-12) [105] B	(12-19) [98] D
Loveridge Rd. Off-Ramp - SB Loveridge Rd. On-Ramp	(12-19) [100] D	(19-25) [32] F	(37-43) [42] F (19-25) [84] E	(43-50) [29] F (37-43) [40] F	(6-12) [105] B	(19-25) [97] D
SB Loveridge Rd. On-Ramp - NB Loveridge Rd. On-Ramp						
NB Loveridge Rd. On-Ramp - SB Somersville Rd. Off-Ramp	(12-19) [105] C	(37-43) [68] F	(19-25) [92] E	(43-50) [39] F	(6-12) [105] B	(12-19) [97] D
SB Somersville Rd. Off-Ramp – NB Somersville Rd. Off-Ramp	(10-30) [105] C	(43-50) [32] F	(19-25) [87] E (19-25) [93] E	(43-50) [37] F (43-50) [34] F	(6-12) [105] B	(19-25) [92] E
NB Somersville Rd. Off-Ramp - Somersville Rd. On-Ramp						
Somersville On-Ramp - L Street Off-Ramp	(12-19) [105] C	(25-31) [76] F	(19-25) [89] E	(25-31) [80] F	(6-12) [105] B	(25-31) [63] F
L Street Off-Ramp - L Street On-Ramp					(12-19) [105] C	(25-31) [84] F
L Street Off-Ramp - G Street Off-Ramp	(12-19) [105] C	(19-25) [90] E	(19-25) [97] D	(19-25) [93] E		
G Street Off-Ramp - A Street Off-Ramp	(6-12) [105] B	(19-25) [97] D	(12-19) [100] D	(19-25) [95] E		
L Street On-Ramp - A Street Off-Ramp					(6-12) [105] B	(19-25) [85] E
A Street Off-Ramp - A Street On-Ramp	(6-12) [105] B	(12-19) [105] C	(12-19) [105] C	(12-19) [100] D	(6-12) [105] B	(12-19) [98] D
A Street On-Ramp - Hillcrest Ave. Off-Ramp	(6-12) [105] B	(12-19) [105] C	(12-19) [100] D	(19-25) [89] E	(6-12) [105] B	(12-19) [100] D
Hillcrest Ave. Off-Ramp - Hillcrest Ave. On-Ramp	(< 6) [105] A	(6-12) [105] B	(12-19) [105] C	(12-19) [103] D	(6-12) [105] B	(12-19) [105] C
Hillcrest Avenue On-Ramp – End			(12-19) [103] D	(12-19) [101] D	(6-12) [105] B	(12-19) [101] D

Note:

(12-19) [100] C = (Density range in vehicles per kilometer per lane) [Vehicle speed in kph] Level of service; **bold text** indicates LOS F. Shaded cells denote the absence of the ramp in question.

Source: Fehr & Peers Associates, May 2003.

**Table E-8: Existing 2001 and Year 2030 Westbound Mainline Peak-Hour Service Levels (English Units)**

SR 4 Mainline Segment	2001 Existing		2030 No Build		2030 Build	
	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>
Beginning - Hillcrest Avenue Off-Ramp			(70-80) [22] F	(70-80) [22] F	(20-30) [64] D	(20-30) [65] C
Hillcrest Ave. Off-Ramp - Hillcrest Ave. NB On-Ramp	(10-20) [65] B	<10) [65] A	(80-90) [15] F	>100) [13] F	(20-30) [65] C	(10-20) [65] B
Hillcrest Ave. NB On-Ramp - Hillcrest Ave. SB On-Ramp					(20-30) [65] C	(10-20) [65] B
Hillcrest Ave. SB On-Ramp - A Street Off-Ramp	(10-20) [64] C	(10-20) [65] B	(70-80) [25] F	(40-50) [48] F	(20-30) [62] D	(20-30) [65] C
A Street Off-Ramp - A Street NB On-Ramp	<10) <sup>2</sup> [10] F	(10-20) [58] E	(70-80) [21] F	(50-60) [31] F	(30-40) [59] E	(20-30) [64] D
A Street NB On-Ramp - A Street SB On-Ramp					(20-30) [59] D	(20-30) [65] C
A Street SB On-Ramp - L Street Off-Ramp					(30-40) [57] E	(20-30) [65] C
A Street On-Ramp - G Street On-Ramp	(20-30) <sup>2</sup> [10] F	(20-30) [65] C	(60-70) [27] F	(60-70) [31] F		
G Street On-Ramp - L Street On-Ramp	(20-30) <sup>2</sup> [9] F	(20-30) [65] C	(60-70) [28] F	(70-80) [29] F		
L Street Off-Ramp - L Street On-Ramp					(30-40) [56] E	(20-30) [63] D
L Street On-Ramp - Somersville Off-Ramp	(30-40) <sup>2</sup> [12] F	(20-30) [65] C	(70-80) [26] F	(40-50) [52] F	(20-30) [58] D	(20-30) [65] C
Somersville Rd. Off-Ramp - Somersville Rd. On-Ramp	(30-40) <sup>2</sup> [7] F	(10-20) [55] E	(60-70) [25] F	(30-40) [58] E	(30-40) [56] E	(20-30) [65] C
Somersville Rd. On-Ramp - Loveridge Rd. Off-Ramp	(50-60) [13] F	(20-30) [65] C	(50-60) [36] F	(30-40) [56] E	(20-30) [59] D	(10-20) [65] B
Loveridge Rd. Off-Ramp - Loveridge Rd. On-Ramp	(60-70) [12] F	(10-20) [51] F	(30-40) [50] E	(20-30) [58] D	(30-40) [60] D	(20-30) [65] C
Loveridge Rd. On-Ramp - Harbor Rd. Off-Ramp			(30-40) [55] E	(20-30) [65] C	(20-30) [61] D	(10-20) [65] B

Note:

- (20-30) [62] C = (Density range in vehicles per mile per lane) [Vehicle speed in mph] Level of service; **bold text** indicates LOS F. Shaded cells denote the absence of the ramp in question.
- Although FREQ is reporting densities between LOS A and LOS D, field observations show LOS F.

Source: Fehr & Peers Associates, May 2003

**Table E-9: Existing 2001 and Year 2030 Eastbound Mainline Peak-Hour Service Levels (English Units)**

SR 4 Mainline Segment	2001 Existing		2030 No Build		2030 Build	
	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>
Railroad Ave. On-Ramp – Loveridge Rd. Off-Ramp			(70-80) [19] F	(70-80) [20] F	(10-20) [65] B	(20-30) [61] D
Loveridge Rd. Off-Ramp - SB Loveridge Rd. On-Ramp	(20-30) [62] D	(30-40) [20] F	(60-70) [26] F (30-40) [52] E	(70-80) [18] F (60-70) [25] F	(10-20) [65] B	(30-40) [60] D
SB Loveridge Rd. On-Ramp - NB Loveridge Rd. On-Ramp						
NB Loveridge Rd. On-Ramp - SB Somersville Rd. Off-Ramp	(20-30) [65] C	(60-70) [42] F	(30-40) [57] E	(70-80) [24] F	(10-20) [65] B	(20-30) [60] D
SB Somersville Rd. Off-Ramp – NB Somersville Rd. Off-Ramp	(10-30) [65] C	(70-80) [20] F	(30-40) [54] E (30-40) [58] E	(70-80) [23] F (70-80) [21] F	(10-20) [65] B	(30-40) [57] E
NB Somersville Rd. Off-Ramp - Somersville Rd. On-Ramp						
Somersville On-Ramp - L Street Off-Ramp	(20-30) [65] C	(40-50) [47] F	(30-40) [55] E	(40-50) [50] F	(10-20) [65] B	(40-50) [39] F
L Street Off-Ramp - L Street On-Ramp					(20-30) [65] C	(40-50) [52] F
L Street Off-Ramp - G Street Off-Ramp	(20-30) [65] C	(30-40) [56] E	(30-40) [60] D	(30-40) [58] E		
G Street Off-Ramp - A Street Off-Ramp	(10-20) [65] B	(30-40) [60] D	(20-30) [62] D	(30-40) [59] E		
L Street On-Ramp - A Street Off-Ramp					(10-20) [65] B	(30-40) [53] E
A Street Off-Ramp - A Street On-Ramp	(10-20) [65] B	(20-30) [65] C	(20-30) [65] C	(20-30) [62] D	(10-20) [65] B	(20-30) [61] D
A Street On-Ramp - Hillcrest Ave. Off-Ramp	(10-20) [65] B	(20-30) [65] C	(20-30) [62] D	(30-40) [55] E	(10-20) [65] B	(20-30) [62] D
Hillcrest Ave. Off-Ramp - Hillcrest Ave. On-Ramp	(< 10) [65] A	(10-20) [65] B	(20-30) [65] C	(20-30) [64] D	(10-20) [65] B	(20-30) [65] C
Hillcrest Avenue On-Ramp – End			(20-30) [64] D	(20-30) [63] D	(10-20) [65] B	(20-30) [63] D
Note: 1. (20-30) [62] C = (Density range in vehicles per mile per lane) [Vehicle speed in mph] Level of service; <b>bold text</b> indicates LOS F. Shaded cells denote the absence of the ramp in question. Source: Fehr & Peers Associates, May 2003.						

<b>Table E-10: Year 2030 Eastbound Ramp Junction Peak-Hour Operations (Metric Units)</b>				
<b>SR 4 Ramp Junction</b>	<b>No-Build Alternative</b>		<b>Build Alternative</b>	
	<b>A.M. Peak <sup>1</sup></b>	<b>P.M. Peak <sup>1</sup></b>	<b>A.M. Peak <sup>1</sup></b>	<b>P.M. Peak <sup>1</sup></b>
Loveridge Rd. Off-Ramp	<b>(43-50) F</b>	<b>(43-50) F</b>	(6-12) B	(12-19) D
SB Loveridge Rd. On-Ramp	<b>(37-43) F</b>	<b>(43-50) F</b>	(6-12) B	(19-25) D
NB Loveridge Rd. On-Ramp	(19-25) E	<b>(37-43) F</b>		
SB Somersville Rd. /Off-Ramp	(19-25) E	<b>(43-50) F</b>	(6-12) B	(12-19) D
NB Somersville Rd. Off-Ramp	(19-25) E	<b>(43-50) F</b>		
Somersville Rd. On-Ramp	(19-25) E	<b>(43-50) F</b>	(6-12) B	(19-25) E
L Street Off-Ramp	(19-25) E	<b>(25-31) F</b>	(6-12) B	<b>(25-31) F</b>
L Street On-Ramp	N/A <sup>2</sup>	N/A <sup>2</sup>	(12-19) C	<b>(25-31) F</b>
G Street Off-Ramp	(19-25) D	(19-25) E	N/A <sup>2</sup>	N/A <sup>2</sup>
A Street Off-Ramp	(12-19) D	(19-25) E	(6-12) B	(19-25) E
A Street On-Ramp	(12-19) C	(12-19) D	(6-12) B	(12-19) D
Hillcrest Avenue Off-Ramp	(12-19) D	(19-25) E	(6-12) B	(12-19) D
Hillcrest Avenue On-Ramp	(12-19) C	(12-19) D	(6-12) B	(12-19) C
Note: 1. (12-19) C = (Density range in vehicles per kilometer per lane) Level of service; <b>bold text</b> indicates LOS F. 2. N/A = not applicable; ramp configuration does not exist for this alternative. Source: Fehr & Peers Associates, May 2003.				

**Table E-11: Year 2030 Westbound Ramp Junction Peak-Hour Operations  
(Metric Units)**

SR 4 Ramp Junction	No-Build Alternative		Build Alternative	
	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>
Hillcrest Avenue Off-Ramp	<b>(43-50) F</b>	<b>(43-50) F</b>	(12-19) D	(12-19) C
Hillcrest Avenue NB On-Ramp	<b>(50-56) F</b>	<b>(&gt;62) F</b>	(12-19) C	(6-12) B
Hillcrest Avenue SB On-Ramp			(12-19) C	(6-12) B
A Street Off-Ramp	<b>(43-50) F</b>	<b>(25-31) F</b>	(12-19) D	(12-19) C
A Street NB On-Ramp	<b>(43-50) F</b>	<b>(31-37) F</b>	(19-25) E	(12-19) D
A Street SB On-Ramp			(12-19) D	(12-19) C
G Street On-Ramp	<b>(37-43) F</b>	<b>(37-43) F</b>	N/A <sup>2</sup>	N/A <sup>2</sup>
L Street Off-Ramp	N/A <sup>2</sup>	N/A <sup>2</sup>	(19-25) E	(12-19) C
L Street On-Ramp	<b>(37-43) F</b>	<b>(43-50) F</b>	(19-25) E	(12-19) D
Somersville Rd. Off-Ramp	<b>(43-50) F</b>	<b>(25-31) F</b>	(12-19) D	(12-19) C
Somersville Rd. On-Ramp	<b>(37-43) F</b>	(19-25) E	(19-25) E	(12-19) C
Loveridge Rd. Off-Ramp	<b>(31-37) F</b>	(19-25) E	(12-19) D	(6-12) B
Loveridge Rd. On-Ramp	(19-25) E	(12-19) D	(19-25) D	(12-19) C
Note: 1. (12-19) C = (Density range in vehicles per kilometer per lane) Level of service; <b>bold text</b> indicates LOS F. 2. N/A = not applicable; ramp configuration does not exist for this alternative. Source: Fehr & Peers Associates, May 2003.				

**Table E-12: Year 2030 Eastbound Ramp Junction Peak-Hour Operations  
(English Units)**

SR 4 Ramp Junction	No-Build Alternative		Build Alternative	
	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>
Loveridge Rd. Off-Ramp	<b>(70-80) F</b>	<b>(70-80) F</b>	(10-20) B	(20-30) D
SB Loveridge Rd. On-Ramp	<b>(60-70) F</b>	<b>(70-80) F</b>	(10-20) B	(30-40) D
NB Loveridge Rd. On-Ramp	(30-40) E	<b>(60-70) F</b>		
SB Somersville Rd. /Off-Ramp	(30-40) E	<b>(70-80) F</b>	(10-20) B	(20-30) D
NB Somersville Rd. Off-Ramp	(30-40) E	<b>(70-80) F</b>		
Somersville Rd. On-Ramp	(30-40) E	<b>(70-80) F</b>	(10-20) B	(30-40) E
L Street Off-Ramp	(30-40) E	<b>(40-50) F</b>	(10-20) B	<b>(40-50) F</b>
L Street On-Ramp	N/A <sup>2</sup>	N/A <sup>2</sup>	(20-30) C	<b>(40-50) F</b>
G Street Off-Ramp	(30-40) D	(30-40) E	N/A <sup>2</sup>	N/A <sup>2</sup>
A Street Off-Ramp	(20-30) D	(30-40) E	(10-20) B	(30-40) E
A Street On-Ramp	(20-30) C	(20-30) D	(10-20) B	(20-30) D
Hillcrest Avenue Off-Ramp	(20-30) D	(30-40) E	(10-20) B	(20-30) D
Hillcrest Avenue On-Ramp	(20-30) C	(20-30) D	(10-20) B	(20-30) C
Note: 1. (20-30) C = (Density range in vehicles per mile per lane) Level of service; <b>bold text</b> indicates LOS F. 2. N/A = not applicable; ramp configuration does not exist for this alternative. Source: Fehr & Peers Associates, May 2003.				

**Table E-13: Year 2030 Westbound Ramp Junction Peak-Hour Operations  
(English Units)**

SR 4 Ramp Junction	No-Build Alternative		Build Alternative	
	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>	A.M. Peak <sup>1</sup>	P.M. Peak <sup>1</sup>
Hillcrest Avenue Off-Ramp	<b>(70-80) F</b>	<b>(70-80) F</b>	(20-30) D	(20-30) C
Hillcrest Avenue NB On-Ramp	<b>(80-90) F</b>	<b>(&gt;100) F</b>	(20-30) C	(10-20) B
Hillcrest Avenue SB On-Ramp			(20-30) C	(10-20) B
A Street Off-Ramp	<b>(70-80) F</b>	<b>(40-50) F</b>	(20-30) D	(20-30) C
A Street NB On-Ramp	<b>(70-80) F</b>	<b>(50-60) F</b>	(30-40) E	(20-30) D
A Street SB On-Ramp			(20-30) D	(20-30) C
G Street On-Ramp	<b>(60-70) F</b>	<b>(60-70) F</b>	N/A <sup>2</sup>	N/A <sup>2</sup>
L Street Off-Ramp	N/A <sup>2</sup>	N/A <sup>2</sup>	(30-40) E	(20-30) C
L Street On-Ramp	<b>(60-70) F</b>	<b>(70-80) F</b>	(30-40) E	(20-30) D
Somersville Rd. Off-Ramp	<b>(70-80) F</b>	<b>(40-50) F</b>	(20-30) D	(20-30) C
Somersville Rd. On-Ramp	<b>(60-70) F</b>	(30-40) E	(30-40) E	(20-30) C
Loveridge Rd. Off-Ramp	<b>(50-60) F</b>	(30-40) E	(20-30) D	(10-20) B
Loveridge Rd. On-Ramp	(30-40) E	(20-30) D	(30-40) D	(20-30) C
Note: 1. (20-30) C = (Density range in vehicles per mile per lane) Level of service; <b>bold text</b> indicates LOS F. 2. N/A = not applicable; ramp configuration does not exist for this alternative. Source: Fehr & Peers Associates, May 2003.				



Table E-14: Year 2030 Weaving Section Peak-Hour Operations					
Direction	SR 4 Weaving Segment <sup>1</sup>	No Build <sup>2</sup>		Build <sup>3</sup>	
		A.M.	P.M.	A.M.	P.M.
East-bound	Somersville Rd. On-Ramp - L Street Off-Ramp	E	F	C	F
	L Street On-Ramp - A Street Off-Ramp	D	E	C	F
	A Street On-Ramp – Hillcrest Avenue Off-Ramp	D	E	C	D
West-bound	Hillcrest Avenue NB On-Ramp - Hillcrest Avenue SB On-Ramp	F	F	E	D
	Hillcrest Avenue SB On-Ramp - A Street Off-Ramp	F	F		
	A Street NB On-Ramp - A Street SB On-Ramp	F	F	F	E
	A Street SB On-Ramp - L Street Off-Ramp	F	F		
	L Street On-Ramp - Somersville Rd. Off-Ramp	F	F	F	D
Notes: 1. The freeway segments between Loveridge Road and Somersville Road are not considered weaving sections because their distance exceeds the maximum considered as a weaving section in the <i>Highway Design Manual</i> (California Department of Transportation, 2003). 2. No weaving sections exist for the No Project condition. Service levels from FREQ model output are shown for comparison purposes. 3. Service levels were computed according to the LOS D methodology identified in the <i>Highway Design Manual</i> (California Department of Transportation, 2003). These results are not directly comparable to the FREQ results as the weaving analysis methodology assumes a mainline capacity of 1,900 vehicles per lane per hour, whereas the FREQ analysis assumes a capacity of 2,200 vehicles per lane per hour. Source: Fehr & Peers Associates, May 2003.					

Table E-15 describes the relationship between the volume-to-capacity ratio and LOS for signalized intersections per the CCTA LOS procedures. Table E-16 summarizes the relationship between delay and LOS for signalized intersections, per the *2000 Highway Capacity Manual*. Unsignalized intersections were also evaluated using this software. Table E-17 presents the LOS thresholds for unsignalized intersections, based on control delay per vehicle.

<b>Table E-15: Signalized Intersection Level of Service Definitions Using V/C Ratio</b>		
<b>Level of Service</b>	<b>Description of Traffic Conditions</b>	<b>V/C Ratio</b>
A	Operations with very slight delay, with no approach phase fully utilized.	0.00 – 0.60
B	Operations with slight delay, and an occasional approach phase is fully utilized.	0.61 – 0.70
C	Operations with average delay. Individual cycle failures begin to appear.	0.71 – 0.80
D	Operations with tolerable delay. Many vehicles stop and individual cycle failures are noticeable.	0.81 – 0.90
E	Operations with high delay, up to several signal cycles. Long queues form upstream of intersection.	0.91 – 1.00
F	Operation with excessive and unacceptable delays. Volumes vary widely depending on downstream queue conditions.	> 1.00
Source: <i>Technical Procedures</i> (Contra Costa Transportation Authority, September, 1997)		

<b>Table E-16: Signalized Intersection Level of Service Definitions Using Control Delay</b>		
<b>Level of Service</b>	<b>Description</b>	<b>Control Delay per Vehicle (sec/veh)</b>
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	≤ 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 – 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 – 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35 – 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 – 80
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80
Source: <i>Highway Capacity Manual</i> (Transportation Research Board, 2000)		

<b>Table E-17: Unsignalized Intersection Level of Service Definitions Using Control Delay</b>		
<b>Level of Service</b>	<b>Average Control Delay (sec/veh)</b>	<b>Description</b>
A	0 – 10	Little or no delay.
B	> 10 – 15	Minor delays.
C	> 15 – 25	Average delays.
D	> 25 – 35	Moderate delays.
E	> 35 – 50	Lengthy delays.
F	> 50	Excessive delays/gridlock.
Source: <i>Highway Capacity Manual</i> (Transportation Research Board, 2000)		

**Table E-18: Year 2030 Intersection Analysis Results Intersections at Interchanges**

Intersection	A.M. (P.M.) Peak Hour <sup>1</sup>	
	No-Build Alternative	Build Alternative
<b>Loveridge Road Interchange</b>		
3. Loveridge Road / State Route 4 EB Ramps	44.3 / D (> <b>80</b> / <b>F</b> )	27.1 / C (24.8 / C)
4. California Avenue / State Route 4 WB Ramps	39.7 / D (43.2 / D)	19.4 / B (21.6 / C)
5. Loveridge Rd. / California Ave. (West) – North Park Blvd.	> <b>80</b> / <b>F</b> (> <b>80</b> / <b>F</b> )	30.0 / C (29.9 / C)
6. Loveridge Road / California Avenue (East)	6.3 / A (3.5 / A)	3.3 / A (3.2 / A)
<b>Somersville Road Interchange</b>		
9. Somersville Road / Delta Fair Blvd.	> <b>80</b> / <b>F</b> (> <b>80</b> / <b>F</b> )	54.7 / D ( <b>45.5</b> / <b>D</b> )
10. Somersville Road / State Route 4 EB Ramps	11.8 / B (14.4 / B)	12.4 / B (16.2 / B)
11. Somersville Road / State Route 4 WB Ramps	42.2 / D (23.4 / C)	14.9 / B (21.7 / C)
12. Somersville Road / Century Blvd / Mahogany Way	<b>74.9</b> / <b>E</b> ( <b>59.7</b> / <b>E</b> )	32.5 / D (39.8 / D)
<b>L Street/Contra Loma Boulevard Interchange</b>		
14. L St/Contra Loma Blvd/ Buchanan Rd/Fitzuren Rd	> <b>80</b> / <b>F</b> (> <b>80</b> / <b>F</b> )	<b>56.1</b> / <b>E</b> (38.6 / D)
15. L St/Contra Loma Blvd./ SR 4 EB Ramps	> <b>50</b> / <b>F</b> <sup>2</sup> (> <b>50</b> / <b>F</b> <sup>2</sup> )	13.3 / B (17.5 / B)
16. L St /Contra Loma Blvd/ SR 4 WB Ramps	4.1 / A <sup>3</sup> (7.1 / A <sup>3</sup> )	23.9 / C (24.9 / C)
<b>A Street/Lone Tree Way Interchanges</b>		
20. A Street / Lone Tree Way /Tregallas Rd. (south)	53.4 / D (35.6 / D)	15.5 / B (21.6 / C)
21. A Street / Lone Tree Way /Tregallas Rd. (north)	29.9 / C (15.3 / B)	16.4 / B (16.3 / B)
22. A Street / Lone Tree Way /SR 4 EB Ramps	64.1 / E (41.6 / D)	21.2 / C (54.7 / D)
23. A Street / Lone Tree Way /SR 4 WB Ramps	29.9 / C (42.6 / D)	8.7 / A (15.1 / B)
<b>Hillcrest Avenue Interchange</b>		
26. Hillcrest Avenue / Tregallas Road <sup>4</sup>	<b>59.6</b> / <b>E</b> ( <b>58.6</b> / <b>E</b> )	40.6 / D ( <b>58.5</b> / <b>E</b> )
27. Hillcrest Avenue / SR 4 EB Ramps <sup>4</sup>	<b>64.0</b> / <b>E</b> (28.3/ C) <sup>5</sup>	> <b>80</b> / <b>F</b> (> <b>80</b> / <b>F</b> )
28. Hillcrest Avenue / SR 4 WB Ramps	31.0 / C (48.2 / D)	Not applicable
28a. Sunset Drive / SR 4 WB Ramps	Not applicable	20.3 / C (38.1 / D)
29. Hillcrest Avenue / Sunset Drive	43.3 / D ( <b>59.2</b> / <b>E</b> )	27.8 / C (29.4 / C) <sup>3</sup>

Note:

- 2.2 / A = Average total delay in seconds per vehicle / intersection level of service. **Bold text** indicates unacceptable LOS at intersections of suburban arterial routes of regional significance (> 45 seconds of delay for signalized intersection, > 30 seconds for unsignalized intersection) under Traffic Service Objective. On lesser routes, **bold text** indicates LOS F.
- Southbound/eastbound
- Northbound.
- These intersections are assumed to operate via a single traffic signal controller.
- The delay results indicate acceptable operations; with no improvement to the freeway, the ramps at Hillcrest Avenue will be underutilized due to traffic diversion onto parallel surface streets.

Source: Fehr & Peers Associates, May, 2003

Table E-19: Year 2030 Intersection Analysis Results – Isolated Intersections					
Intersection		No-Build Alternative		Build Alternative	
		CCTA LOS A.M. (P.M.) <sup>1</sup>	HCM A.M. (P.M.) <sup>2</sup>	CCTA LOS A.M. (P.M.) <sup>1</sup>	HCM A.M. (P.M.) <sup>2</sup>
1	Loveridge Rd/Buchanan Rd	0.78/C <b>(0.94/E)</b>	34.3/C <b>(63.0/E)</b>	0.66/B (0.51/A)	22.8/C (13.4/B)
2	Loveridge Rd/ East Leland Rd	> <b>1.00/F</b> (0.91/E)	> <b>80/F</b> (71.8/E)	0.90/D (0.68/B)	63.1/E (45.4/D)
7	Loveridge Rd/ Pittsburg- Antioch Hwy	<b>0.99/E</b> (> <b>1.00/F</b> )	> <b>80/F</b> (> <b>80/F</b> )	<b>0.87/D</b> ( <b>0.90/D</b> )	> <b>80/F</b> (> <b>80/F</b> )
8	Somersville Rd/ Buchanan Rd	<b>0.93/E</b> ( <b>0.88/D</b> )	> <b>80/F</b> ( <b>61.1/E</b> )	0.53/A (0.64/B)	31.0/C (31.2/C)
13	Somersville Rd/Pittsburg- Antioch Hwy	> <b>1.00/F</b> (> <b>1.00/F</b> )	> <b>80/F</b> (> <b>80/F</b> )	> <b>1.00/F</b> (0.68/B)	> <b>80/F</b> (31.3/C)
17	L St/Claudia Ct	Not applicable	27.9/D <sup>4</sup> 22.0/C <sup>4</sup>	Not applicable	25.2/D <sup>4</sup> 22.0/C <sup>4</sup>
24	A St/Bryan Ave/Texas St	Not applicable	>50/F <sup>5</sup> (>50/F <sup>5</sup> )	Not applicable	> <b>50/F<sup>5</sup></b> (> <b>50/F<sup>5</sup></b> )
25	A St/10 <sup>th</sup> St	> <b>1.00/F</b> (> <b>1.00/F</b> )	> <b>80/F</b> (> <b>80/F</b> )	> <b>1.00/F</b> (0.74/C)	> <b>80/F</b> (61.5/E)
30	Hillcrest Rd/East 18 <sup>th</sup> St	<b>0.90/D</b> ( <b>0.88/D</b> )	<b>58.2/E</b> ( <b>55.6/E</b> )	0.73/C (0.78/C)	<b>33.3/E</b> (43.6/D)
Notes: 1. Signalized intersection V/C/LOS based on CCTA LOS analysis. <b>Bold text</b> indicates unacceptable LOS at intersections of suburban arterial routes of regional significance (> 45 seconds of delay for signalized intersection, > 30 seconds for unsignalized intersection) under Traffic Service Objective. On lesser routes, <b>bold text</b> indicates LOS F. 2. Signalized intersection average vehicle delay/LOS based on SYNCHRO 5.0 and 2000 HCM. <b>Bold text</b> follows usage in note 1. 3. For all-way stop-controlled intersections, the control delay/LOS for the intersection is reported; for side-street stop controlled intersections, the control delay/LOS for the worst approach is reported based on SYNCHRO 5.0 and 2000 HCM. 4. Worst-case reported for westbound approach. 5. Worst-case reported for westbound and eastbound approaches. Source: Fehr & Peers Associates, May 2003.					